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## NOTOSTOMUS BEEBEI

*A NEW SPECIES OF DEEP-SEA MACRURAN FROM  
BERMUDA*

BY LEE BOONE

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Fig. 6. *Notostomus beebei* Boone sp. nov. Type: Nearly natural size. Photograph by Julius Kirschner.



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## NOTOSTOMUS BEEBEI

*A New Species of Deep-Sea Macruran from Bermuda.*<sup>1</sup>

By LEE BOONE

Preamble—Genus *NOTOSTOMUS*,<sup>2</sup> A. Milne Edwards.

(Fig. 6)

Strikingly conspicuous among the thousands of bathypelagic macruran crustaceans obtained by the twelfth Expedition of the Tropical Research Station of the New York Zoological Society to Bermuda, under the direction of Dr. William Beebe, is a new species, *Notostomus beebei*, represented by a magnificent spectrum-red animal quite six inches long. In the light of present knowledge this genus is to be regarded as one of the rarest of deep-sea Macrura, since only thirty-four specimens representing eighteen distinct species have been captured by all the deep-sea expeditions prior to the Beebe-Bermuda dredgings. Of these, nineteen individuals were taken in the north Atlantic by the *Michael Sars*. Murray and Hjort (See "Depths of the Ocean," 1912, p. 386, fig. 425) state that five species, four of which are new, are represented. It is to be regretted that diagnoses of these new species have not yet been recorded.

*Notostomus beebei* is the fifteenth species of the genus to be described and the nineteenth member to be recorded, unless it prove identical with one of the undescribed new species mentioned by Murray and Hjort, in which event *N. beebei* becomes the eighteenth member. The specimen before me measures 141 mm. or about 5.5 inches from tip of rostrum to tip of telson, making it among the largest known specimens of the genus. It is the seventh species to be described from the deep-sea fauna of the Eastern coasts of the Americas, *N. gibbosus* A. Milne Edwards, originally taken by the Blake off Grenada, Antilles, in 627 fms. being the genotype. *N. elegans* M. Edw. was taken in the Gulf of Mexico, 955 fms., by the Blake. *N. brevirostus* Spence Bate, said by him to be a near relation of variety of *N. gibbosus* M. Edw., was taken by the Challenger off Pernambuco, Brazil, Stanley Kemp considers this identical with Bate's *N. perlatus*

<sup>1</sup> This paper properly should have been delayed until the trawling data of the Bermuda Oceanographic Expedition was published, but as the description was completed at an early date it has been thought best to bring it out at once. The exact locality of the capture of the new species was 32° 16' No. Lat.: 64° 36' West Long., five miles south of Nonsuch Island, Bermuda, at a depth of nine hundred fathoms. Ed.

<sup>2</sup> Contribution, New York Zoological Society, Department of Tropical Research, No. 318.

also taken by the Challenger near the Philippine Islands. Bate himself indicated his awareness of this close relationship, noting both *perlatus* and *brevirostus* as varietal differences from *N. gibbosus*.

*N. robustus* Smith, 1884, was taken by the Albatross off the east coast of the United States and *N. vescus* Smith 1886, also off the east coast of the United States, by the Albatross, in 2949 fms.

*N. murrayi* Bate was taken in the southern Atlantic near Tristan da Cunha, in 1900 fms. by the Challenger, while *N. atlanticus* Lenz, 1914, taken in 1640 fms., west of the Azores, completes the list of described species known from the entire Atlantic.

Two species are known from the tropical American Pacific, of which *N. westergreni* Faxon, 1895, the type was taken by the Albatross off the coast of Ecuador in 1740 fms. The second record of the species was a specimen taken off the Cape of Good Hope in 800 fms.; the first female of this species was taken by the Arcturus at station 74, in 900 fms.

The second species from the tropical American Pacific is *N. fragilis* Faxon, 1895, taken off Cocos Island in 700 fms.

The other three described species of *Notostomus* were taken by the Challenger and described by Bate. One of these, the above mentioned *perlatus*, was taken near the Philippines in 2150 fms. and by the Percy Sladen Trust Expedition south of the Chagos Archipelago in 1200 fms. while *N. patentissimus* Bate was taken in 2150 fms., south of the Philippines, and *N. japonicus* Bate was taken in only 565 fms., south of Japan, the least depth at which a *Notostomus* has been recorded.

*N. gibbosus* A. Milne Edwards, was also taken by the Beebe Expedition at 1000 fms.,—net 192, June 19, 1929, a single specimen, spectrum red, which curiously measures from tip of rostrum to tip of telson, 141 mm., or exactly the same as does the new species. The eye in *N. gibbosus* is substantially larger than in *N. beebei*, the cornea of the former measuring 5.1 mm. long diameter, while that of *N. beebei* measures 3.8. The rostral formula is also different and the rostral shape is likewise distinctive. In fact the rostral shape and formula of *N. beebei* is strikingly different from that of any of the known members of the genus.

The present specimen of *N. gibbosus* curiously possesses the unbroken rostral-orbital carina of *N. gibbosus* on one side of the carapace, while the opposite side has this carina interrupted behind the orbit and directed obliquely upward as in *N. robustus* S. I. Smith. It is highly probable that capture of additional specimens will prove these two species



identical. Prof. Smith's description of the species is much more satisfactory than that of Dr. Milne Edwards.

NOTOSTOMUS BEEBEL, sp. nov.

*Type: Locality, five miles south of Nonsuch Island, Bermuda, Lat. 32° 16' N., Long. 64° 36' W., May 25, 1929. Taken in net 124 at a depth of 900 fathoms. Type in the collections of the Department of Tropical Research of the New York Zoological Society, Field No. 29213.*

Technical Description: Rostrum about 20.5 mm. from tip to orbital angle; carapace 45.0 mm. from orbital angle to posterior margin, abdominal segments one to six inclusive 54 mm. long, telson 25 mm. long. Carapace robust, compressed in the median dorsal line forming a strong carina which is moderately convex forming a sort of crest, which is more elevated anteriorly, terminating about opposite the orbital angle, and which is regularly, very finely denticulated throughout its entire length. There is a concave, non-denticulated excavation interrupting the dorsal carina, beginning about opposite the orbital angle and terminating distally about opposite the distal margin of the basal antennular segment. The dorsal margin of the rostrum anterior to this excavation is compressed, carinate, armed with a compound quadrispine fused basally, at the margin of the dorsal excavation and followed anteriorly by seven subequal and subequally spaced small, sharp, upward and forward directed spines, which are spaced along the down sloping rostral carina. Beyond the most anterior of these spinelets is the long, acute forward pointing apical spine which is 5.0 mm. long. The inferior rostral margin is armed with three short, acute, obliquely downward-pointing spines, spaced subequally, the most anterior of which is opposite the first spine of the superior margin. There is a carina on each side, converging anteriorly in the apical spine of the rostrum and running back along the inferior rostral margin to a point just behind the orbital angle, and terminating slightly above, but not fusing with the orbital carina which begins about 2 mm. behind the frontal margin and extends back quite to the carinated posterior margin of the carapace, having a length of 45 mm. Below this carina and separated from it by a distinct sulcus there is on the hinder half of the carapace a shorter carina about 18 mm. long approximately paralleling the orbital carina. There is a short, wide, postorbital spine. The antennal spine is longer and flares outward obliquely. The antennal

or second lateral carina runs from this spine backward, uniting with the carina of the extreme lateral margin posteriorly, where the latter converges with the carinate posterior margin of the carapace. Anteriorly this lateral carina curves around along the frontal margin, having its origin in front of the antennal spine. There is a short slightly oblique hepatic carina uniting the orbital and antennal carina.

All six abdominal segments are carinate in the median dorsal line, this carina terminating on each third, fourth, fifth, and sixth, segments in a small, sharp spine, directed posteriorly. The telson has a deep excavated sulcus throughout its entire length. The caudal fan has the inner blade narrowly oval, tapered and shorter than the telson. The outer blade is much wider, broadly oval distally and rounded, with a subdistal spine on the outer lateral margin and is longer than the telson.

The eye has the stalk smaller basally, dilating distally but less so than the terminally placed, ovoid cornea, which is shining black.

The antennulae have the basal article excavate beneath the eye and with a spine distally on the raised outer lateral margin; the second and third articles are short, chunky, the distal margin of the second joint recurvate in a lateral view; the inner flagellum is exceedingly slender, and after the first thirty annulations is very finely articulated, having a length of 70 mm. The outer whip is very thick for the first 15 mm. of its length; it is broken off in the type at a length of 35 mm.

The antennae have a short thick basal article, with a spine at the outer distal angle, the second and third articles are stocky, their combined length about two-fifths of that of the scaphocerite, the flagellum is 10 inches long, smooth and fine. The scaphocerite exceeds the length of the rostrum by about 20 per cent. of its own length. It is oval, with its greatest width about two-fifths of its length; the inner lateral margin more convex than the outer, which is thickened and produced distally in an acute spine which projects beyond the narrowed, rounded margin of the carina. There is also a median longitudinal carina on the scale.

The legs and pleopoda afford no specific characters.

The illustration of the species was made by Mr. Julius Kirschner of the American Museum of Natural History under my direction.